

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board

Paper No. 15

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte ERIC G. STEVENS,
JAMES P. LAVINE and CHARLES V. STANCAMPIANO

Appeal No. 1999-0844
Application 08/633,598

ON BRIEF

Before THOMAS, LALL and BARRY, Administrative Patent Judges.

THOMAS, Administrative Patent Judge.

DECISION ON APPEAL

Appellants have appealed to the Board from the examiner's final rejection of claims 1 through 3, 5, 10, 11 and 13 through 16, which constitute all the claims remaining in the application.

Representative claim 10 is reproduced below:

10. An image sensor structure which provides low voltage electronic shuttering that is conducive to internal gettering comprising:

a substrate of n-type conductivity having a top and a bottom surface;

a first laterally uniform, deep n-layer on top of the substrate and underneath the entire area of the image sensor and a second laterally uniform n-layer on top of the first laterally uniform n-layer; and

a laterally uniform, lightly doped p-layer formed in the second laterally uniform n-layer, such that the p-layer is located beneath the image sensor and above the n-layer substrate and the first deep n-layer and;

wherein the first laterally uniform, deep n-layer is more heavily doped than the second laterally uniform n-layer.

The following reference is relied upon by the examiner:

Watanabe

5,404,039

Apr. 4, 1995

Claims 10, 11 and 13 through 16 stand rejected under 35 U.S.C. § 102 as being anticipated by Watanabe. As to a separate rejection relying on this reference, the examiner asserts unpatentability under 35 U.S.C. § 103 of claims 1 through 3, 5, 10, 11 and 13 through 16, based upon Watanabe and appellants' admitted prior art Figure 4.

Rather than repeat the positions of the appellants and the examiner, reference is made to the briefs and the answer for the respective details thereof.

OPINION

We reverse both rejections.

The basis of the examiner's rejection of claim 10 under 35 U.S.C. § 102 and of claim 1 under 35 U.S.C. § 103 is the Figure 5 embodiment of Watanabe's invention, the examiner alleging that there are two portions within region 10 shown in this figure which correspond in doping level and location to the claimed first and second laterally uniform n-layers of independent claim 10 and independent claim 1. We do not agree with the examiner's interpretation of column 11, lines 6 through 13 as providing the basis to allege that there are two separate portions within the region 10. Thus, as expressed at the top of page 2 of the reply brief, we agree with appellants that this two-portion view of region 10 of Watanabe's Figure 5 is not supported by column 11, lines 11 through 13.

Both independent claim 10 and independent claim 1 recite in the wherein clause the feature that "the first laterally uniform, deep n-layer is more heavily doped than the second laterally uniform n-layer." According to Figure 5, there is only one n-layer, region 10, instead of the claimed first and second layers, which are further recited in the claims on appeal to be of different doping levels, and more specifically recited relative to each other as the first layer being more heavily doped than the second layer. Watanabe's own contribution in the art is reflected in the embodiments shown in Figures 1, 4 and 5, and the corresponding discussion of each of them commonly refer to the impurity concentrations

levels depicted in Figure 2 which appear to indicate in a general manner that the doping level of region 10 is uniform and not composed of two “portions” as argued by the examiner. As such, we are also in agreement with appellants' views expressed in the brief that the claimed invention has a decreasing opposite conductivity towards the adjacency of the n-type layer with the p-type layer instead of Watanabe's showings in Figure 5 of two opposite conductivity types that are adjacent with increasing opposite conductivity toward their adjacency, which Figure 2 bears out.

In view of the foregoing, we reverse the rejection of independent claim 10 and its respective dependent claims, 11 and 13 through 16 as being anticipated by Watanabe. For the same reasons, we reverse the rejection of claims 1 through 3, 5, 10, 11 and 13 through 16 under 35 U.S.C. § 103 based upon Watanabe in view of appellants'

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admitted prior art Figure 4 since both independent claims 1 and 10 recite the same feature. Therefore, the decision of the examiner rejecting various claims on appeal under 35 U.S.C. § 102 and 35 U.S.C. § 103 is reversed.

REVERSED

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| James D. Thomas |) | |
| Administrative Patent Judge |) | |
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| |) | BOARD OF PATENT |
| Pharshotam S. Lall |) | |
| Administrative Patent Judge |) | APPEALS AND |
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| Lance Leonard Barry |) | |
| Administrative Patent Judge |) | |

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